

Lomanthus, a new genus of the Compositae-Senecioneae from Ecuador, Peru, Bolivia and Argentina

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Abstract

Lomanthus B. NORD. & PELSER is segregated from *Senecio* L. as a new genus of the Compositae-Senecioneae. It is distributed in Ecuador, Peru and Bolivia, from coastal lowlands to Andean upper slopes, with two species also extending into Argentina. The 17 species so far recognized are perennial herbs or subshrubs with usually lobed or incised leaves that are often densely tomentose beneath, sessile or pseudo-petiolate, and often have auriculate and sometimes decurrent bases. In corolla and style morphology *Lomanthus* resembles genera like *Dorobaea* and *Talamancalia*, which also have relatively long corolla tubes, tubular and gradually widening disc floret corollas, and obtuse style tips with short and few sweeping-hairs. Molecular evidence from nuclear and plastid DNA sequences place *Lomanthus* in a clade with i.a. *Dorobaea*, *Talamancalia*, *Charadramaetes*, *Pseudogynoxys*, and *Werneria*. All of these are Central and South American genera with a distant position within subtribe Senecioninae in relation to the core genus *Senecio*.

Introduction

The tribe Senecioneae is one of the largest tribes of the Compositae with about 3,500 species in c. 160 genera and a worldwide distribution. During ongoing phylogenetic studies of nuclear and plastid DNA sequences (PELSER et al. 2007, PELSER et al. in prep.), the generic limits within the tribe have been clarified and

better defined and it has been possible to circumscribe the core genus *Senecio* as a monophyletic taxon (PELSEr et al. 2007, NORDENSTAM et al. 2009). In this process some traditionally recognized genera had to be included in *Senecio*, and some groups within *Senecio* need to be segregated as separate genera. Among the latter is an assemblage of South American species corresponding to the ten species of *Senecio* sect. *Senecio* ser. *Lomincola* H. BELTRÁN & GALÁN DE MERA (BELTRÁN & GALÁN DE MERA 1996) and seven additional species (*Senecio albaniae* H. BELTRÁN, *S. bangii* RUSBY, *S. fosbergii* CUATREC., *S. mollendoensis* CABRERA, *S. putcalensis* HIERN, *S. subcandidus* A. GRAY, and *S. velardei* CABRERA). The close relationships between ser. *Lomincola* and some of these seven species was first suggested by BELTRÁN (2002) on the basis of morphological resemblance and is supported in our ongoing molecular systematic studies of the Senecioneae which included sequences of *Senecio abadianus* DC., *S. albaniae*, *S. arnaldii* CABRERA, *S. bangii*, *S. cerrateae* CABRERA, *S. fosbergii*, *S. lomincola* CABRERA, *S. tovari* CABRERA, and *S. yauyensis* CABRERA. These nine species were found to form a well supported clade with the Central and South American genera *Caxamarca*, *Charadranaetes*, *Dorobaea*, *Garcibarrigoa*, *Jessea*, *Misbrookea*, *Pseudogynoxys*, *Talamancalia*, *Werneria*, and *Xenophyllum* (PELSEr et al. in prep.). This assemblage is only remotely related to *Senecio* s.str. and also different in morphology, as detailed below. Its distant relationship to *Senecio* s.str. was already noticed by NORDENSTAM & PRUSKI (1995) and NORDENSTAM (1996), who transferred two of its species (*Senecio putcalensis* and *S. fosbergii*) to *Talamancalia*. Our DNA sequence studies, however, indicate that this assemblage does not form a monophyletic group with *Talamancalia* s.str. (PELSEr et al. in prep.) and should be described as a new genus, which we name *Lomanthus* B. NORD. & PELSEr.

Description and discussion

Lomanthus B. NORD. & PELSEr, gen. nov.

Type: *Lomanthus arnaldii* (CABRERA) B. NORD. & PELSEr.

Herbae perennes vel suffrutices aut frutices humiles erecti ramosi. Folia alterna caulina membranacea plana sessilia vel breviter petiolata aut pseudo-petiolata integra vel lobati-pinnatisecta pinnatinervia supra subglabra subtus plerumque tomentosa, margine interdum serrata vel dentata, basi saepe auriculata. Capitula pauca vel plures cymoso-corymbosa, raro solitaria et longe pedunculata, heterogama radiata floribus flavis vel aurantiacis. Involucrum campanulatum calyculatum; involucri bractee 13–21 uniseriatae lineari-lanceolatae attenuatae. Receptaculum nudum alveolatum. Flosculi radii feminei fertiles, tubus longe cylindricus, lamina plerumque 5-venosa. Flosculi disci numerosi hermaphroditi, corolla tubulosa e tubo longo cylindrico sensim ampliata 5-lobata. Antherae

ecaadatae. Styli rami apice obtusi vel subtruncati pilis efferentibus brevibus, areis stigmaticis separatis. Cypselae oblongae teretes costatae breviter villosae. Pappi setae numerosae bi- vel pluriseriatae minute barbellatae albae persistentes.

Perennial herbs, subshrubs or shrubs, erect, branching, often from the base, pubescent, sometimes glabrescent. Leaves cauline, alternate, membranaceous (herbaceous), flat, sessile or shortly petiolate or pseudo-petiolate, often with auriculate leaf-base and/or winged petiole, entire or lobate-pinnatisect, pinnately veined, margins often dentate or serrate, often glabrous above or nearly so and usually densely tomentose beneath. Capitula few to several in cymose-corymbose arrangement, rarely solitary on elongated peduncles, heterogamous, radiate, yellow- or orange-flowered. Peduncles sparsely bracteolate. Involucre campanulate, calyculate; calyculus bracts few-several, narrowly linear-filiform; involucre bracts uniseriate, 13-21, linear-lanceolate-narrowly oblong, attenuate. Receptacle flat, nude, alveolate. Ray florets female, fertile; tube cylindric, 4-8 mm long; lamina strap-shaped, apically 3-toothed, 5 (rarely 4-7)-veined. Disc florets numerous, hermaphroditic; corolla tubular with a rather long tube (often 5 mm or more), mostly gradually widening upwards, 5-lobed, glabrous or minutely glandular-pubescent at the junction between tube and limb; lobes lanceolate to narrowly ovate, midveined and with lateral veins. Anthers ecaudate, basally obtuse; endothecial tissue mainly radial or transitional with some cells with polar thickenings, apical appendage narrowly ovate-oblong-lanceolate, obtuse; filament collar elongate balusterform with basal cells somewhat dilated. Style branches apically obtuse-subtruncate with short sweeping-hairs, stigmatic surfaces inside separated; dorsal side minutely papillate distally. Cypselas oblong, terete, with 5-8 ribs and veins, shortly villous with papilliform mucilaginous duplex hairs; ovary wall crystals small, plate-like, hexagonal-rectangular or subquadratic; carpodium of 3-5 cell rows. Pappus bristles bi- or pluriseriate from an annular disc wider than the cypselas, very minutely barbellate with lax and short acute teeth, white, persistent.

The new genus is distinct from *Senecio* s.str. in floral morphology, both ray and disc florets mostly having relatively long tubes, and the disc corolla is usually gradually widening upwards, not conspicuously differentiated in a distinct tube and campanulate limb as is common in *Senecio* and related genera. In *Dorobaea* and *Talamancalia* the tubular corolla is even more extreme and the corolla lobes are more elongated, almost lanceolate. In the three genera *Dorobaea*, *Talamancalia* and *Lomanthus* the corolla lobes are midveined. A special feature of *Lomanthus* is the 5-veined rays, whereas *Senecio* and most other members of the subtribe Senecionineae usually have 4-veined rays. The disc floret style is subtruncate to obtuse with rather short and few sweeping-hairs in contrast to the typical *Senecio* style-branch, which is truncate with a distinct brush of sweeping-hairs.

In *Dorobaea* and *Talamancalia* the style branch tips are even more obtuse and provided with a short collar of sub-apical sweeping-hairs or small sub-apical and lateral tufts. The cypselar hairs in *Lomanthus* are generally short and myxogenic, the anther collars are elongated balusterform and the apical anther appendage is narrow, more lanceolate or narrowly oblong than ovate. In vegetative morphology, *Lomanthus* is different from most South American *Senecio* species in having a usually densely tomentose indumentum on the lower leaf surface, sometimes with strongly septate multicellular hairs. A tomentose indumentum is, however, also found in several Peruvian *Senecio* species such as *S. calcensis* CABRERA & ZARDINI and *S. mandonianus* WEDD. *Lomanthus* species have divided or at least serrate leaves. The leaf-bases are often characteristically auriculate and frequently half-clasping, sometimes decurrent on the stem.

Pending a taxonomic revision we presently refer 17 species to the new genus. They are low subshrubs or perennial herbs with the majority of species in Peru, a few in southern Ecuador and also in Bolivia and Argentina. Some of the species are characteristic of the 'lomas y cerros bajos' of Peruvian littoral areas. The generic name is formed from the Spanish 'loma' = hillock, hummock.

1. *Lomanthus abadianus* (DC.) B. NORD. & PELSER, comb. nov.

Basionym: *Senecio abadianus* DC., Prodr. 6: 423 (1838). – Type: Peru, "circa Limam" (not located; missing in G-DC).

Syn.: *Senecio pulchrifolius* CABRERA, Bol. Soc. Peruana Bot. 2: 23 (1950). – Type: Peru, Dep. Lima, Lomas de Atocongo, 200–300 m, 28.VIII.1946, M. O. VELARDE NUÑEZ 277 (LP holotype).

This Peruvian species occurs from low altitude 'lomas' to Andean upper slopes (200–3400 m, Dep. Lima, Arequipa and Moquegua).

DE CANDOLLE (1838) also recognized a variety, viz. *Senecio abadianus* DC. var. *araneosus* DC. The type is missing in G-DC and the taxonomic status of the variety is not clear.

2. *Lomanthus albaniae* (H.BELTRÁN) B. NORD. & PELSER, comb. nov.

Basionym: *Senecio albaniae* H. BELTRÁN, Novon 12: 35 (2002). – Type: Peru, Dep. Lima, Huarochiri, San Pedro de Casta, Mashca, Camino del pueblo San Pedro de Casta hacia Marcahuasi, 11°46'S, 76°35'W, 3680 m, 21.V.2000, H. BELTRÁN 3474 (USM holotype; B, F!, HAO, HUT, MO, NY, S!, TEX, US isotypes).

Lomanthus albaniae is known from mid- to high elevations (1900–3680 m) in Peru (Dep. Lima) and Argentina (Prov. Catamarca, Mendoza, and Salta).

3. *Lomanthus arnaldii* (CABRERA) B. NORD. & PELSNER, comb. nov.

Basionym: *Senecio arnaldii* CABRERA, Notas Mus. La Plata, Bot. 18(89): 203 (1955). – Type: Peru, Dep. La Libertad, Prov. Trujillo, Lomas de Virú, 500 m, 3.IX.1949, A. LÓPEZ MIRANDA 0383 (LP holotype!, HUT isotype!).

The species is readily recognized by the large and deeply pinnatisect leaves which are white-tomentose beneath. It has been recorded in Ecuador (Prov. Loja) and Peru (Dep. Arequipa, Cajamarca, La Libertad, and Lambayeque) between 1700 and 3600 m.

4. *Lomanthus bangii* (RUSBY) B. NORD. & PELSNER, comb. nov.

Basionym: *Senecio bangii* RUSBY in Mem. Torrey Bot. Club 3, no. 3: 64 (1893). – Type: Bolivia, Oruru, Capi, III.1890, M. BANG 778 (NY holotype, F isotype!).

Lomanthus bangii is a species growing at relatively high elevations (2900–3070 m) in Argentina (Prov. Rio Negro) and Bolivia (Dep. La Paz).

5. *Lomanthus calachaquensis* (CABRERA) B. NORD., comb. nov.

Basionym: *Senecio calachaquensis* CABRERA, Notas Mus. La Plata, Bot. 18(89): 227 (1955). – Type: Peru, Dep. Lima, Prov. Huarochirí, Calachaca, cerca a la primera cumbre entre Santiago de Anchucaya y Tuctucocha, en monte rígido a 3900 m s.m., 14.V.1953, EMMA CERRATE 1886 (LP holotype!, MO isotype).

A species of central Peru (Dep. Ancash and Lima; VISION & DILLON, 1996) at altitudes between 2000 and 4000 m. Although CABRERA considered it related to *S. cuatrecasasi* CABRERA, this species seems to belong to *Lomanthus*. It was assigned to *Senecio* ser. *Lomincola* by BELTRÁN & GALÁN DE MERA (1996).

6. *Lomanthus cerrateae* (CABRERA) B. NORD. & PELSNER, comb. nov.

Basionym: *Senecio cerrateae* CABRERA (“*cerratei*”), Notas Mus. La Plata, Bot. 18(89): 201 (1955). – Type: Peru, Dep. Lima, Prov. Huarochirí, alrededores de Anchuca, al NW. de Huarochirí, en monte bajo a 3600 m, 15.V.1953, EMMA CERRATE 1916 (LP holotype!).

A species of high altitude in Peru (Dep. Lima; VISION & DILLON 1996) with glabrous leaves, which are distinctly lobed and have dentate margins.

7. *Lomanthus fosbergii* (CUATREC.) B. NORD. & PELSNER, comb. nov.

Basionym: *Senecio fosbergii* CUATREC., Fedde Repert. 55: 138 (1953). – Syn.: *Talamancalia fosbergii* (CUATREC.) B. NORD., Comp. Newsl. 29: 49 (1996). – Type: Ecuador, Loja, NE slope of Cerro Mataperro 3 km SW San Pedro, 10 km WNW of Catamayo, 1815 m, 10.II.1945, F. R. FOSBERG & M. A. GILER 22946 (US holotype!).

This species is related to *L. putcalensis*, differing by the larger and less dissected leaves, distinctly winged petioles and auriculate leaf-bases. It seems to be restricted to the Catamayo valley in the Loja district of southern Ecuador (cf. NORDENSTAM 1996).

8. *Lomanthus icaensis* (H.BELTRÁN & GALÁN DE MERA) B. NORD., comb. nov.

Basionym: *Senecio icaensis* H.BELTRÁN & GALÁN DE MERA, Anales Jard. Bot. Madrid 55(1): 168, fig. (1997). – Type: Peru, Dep. Arequipa, Prov. Caraveli, Los Cerrillos, al sur de Nazca, km 500 de la Panamericana Sur, 650–700 m, 26.VIII.1957, K. RAHN 104 (USM 29343 holotype).

9. *Lomanthus lomiucola* (CABRERA) B. NORD. & PELSER, comb. nov.

Basionym: *Senecio lomiucola* CABRERA, Notas Mus. La Plata, Bot. 18(89): 195 (1955). – Type: Peru, Dep. Lima, Prov. Chancay, Lomas de Lachay, 700 m, X.1949, O. VELARDE NÚÑEZ 2247 (LP holotype!).

Widespread in Dep. Lima, Ancash, and Arequipa (VISION & DILLON 1996) at lower altitudes (300–900 m). This species is related to *L. abadianus* but differs by shortly lobed and acutely dentate leaves.

10. *Lomanthus mollendoensis* (CABRERA) B. NORD., comb. nov.

Basionym: *Senecio mollendoensis* CABRERA, Bol. Soc. Argent. Bot. 10: 35 (1962). – Type: Peru, Mollendo, R. S. WILLIAMS 2529 (K holotype).

A species found in Peru (Dep. Arequipa; VISION & DILLON 1996) at low altitudes (350–450 m).

11. *Lomanthus okopauus* (CABRERA) B. NORD., comb. nov.

Basionym: *Senecio okopauus* CABRERA, Bol. Soc. Argent. Bot. 10: 36, fig. 6 (1962). – Type: Peru, Dep. Arequipa, Prov. Caravelí, lomas de Chaparra, cerca de Chala, 400–500 m, 14.X.1956, R.A. FERREYRA 11975 (LP holotype!; F, USM isotypes).

12. *Lomanthus putcalensis* (HIERON.) B. NORD., comb. nov.

Basionym: *Senecio putcalensis* HIERON., Bot. Jahrb. Syst. 28: 635 (1901). – Syn.: *Talamancalia putcalensis* (HIERON.) B. NORD. & PRUSKI, Comp. Newsl. 27: 35 (1995). – Type: Ecuador, Pucala near Loja, 1800–2400 m, Oct. (year not given), LEHMANN 8007 (K lectotype!, selected by NORDENSTAM & PRUSKI 1995); B holotype, destroyed, photograph US!; K isotype!).

A rare species from the Loja and Chirinos districts in southern and northwestern Ecuador (NORDENSTAM & PRUSKI 1995), more recently also found in Peru (BELTRÁN

& PRUSKI 2000).

13. *Lomanthus subcandidus* (A. GRAY) B. NORD., comb. nov.

Basionym: *Senecio subcandidus* A. GRAY, Proc. Amer. Acad. Arts v. 141 (1861). – Type: Peru, Obraillo, Wilkes Expedition, GH 12206 (GH fragment, isotype).

Lomanthus subcandidus is found in Peru (Dep. Ancash, Arequipa, Cajamarca, Huanuco, and Lima; VISION & DILLON 1996) at various altitudes (180–3600 m). The taxonomic status and affinities of the varieties distinguished, viz. var. *glabrescens* CUATREC., var. *minor* A. GRAY, and var. *pinnatifidus* CUATREC., need further study.

14. *Lomanthus tovari* (CABRERA) B. NORD. & PELSNER, comb. nov.

Basionym: *Senecio tovari* CABRERA, Notas Mus. La Plata, Bot. 18(89): 198 (1955). – Type: Peru, Dep. Lima, arriba de Surco, 2000 m, 20.V.1949, R. FERREYRA 6056 (LP holotype!).

Distributed in Peru (Dep. Lima, Ayacucho, and Arequipa) at (100–)1800–3300 m.

15. *Lomanthus truxillensis* (CABRERA) B. NORD., comb. nov.

Basionym: *Senecio truxillensis* CABRERA, Notas Mus. La Plata, Bot. 18(89): 199 (1955). – Type: Peru, Dep. La Libertad, Prov. Trujillo, Cerro Campana, 550 m, 14.VIII.1948, A. LÓPEZ MIRANDA 0175 (LP holotype!, HUT isotype!).

A Peruvian species of mostly lower altitudes, 300–750(–2300) m, in the hills of Dep. Ancash, Cajamarca, and La Libertad (VISION & DILLON 1996). Its leaves are entire with sinuate-dentate margins.

16. *Lomanthus velardei* (CABRERA) B. NORD. & PELSNER, comb. nov.

Basionym: *Senecio velardei* CABRERA, Notas Mus. La Plata, Bot. 15(75): 109 (1950). – Type: Peru, Dep. Lima, Prov. Canta, Canta, 2500–2600 m, 23.V.1948, O. VELARDE 1024 (LP holotype! isotype!).

This species has large dissected and abaxially tomentose leaves somewhat like *L. arnaldii*, but the leaves are assembled near the base of the hexagonal stem, and the leaves are more profoundly dissected, more or less bipinnatisect, and the capitula are smaller and the rays shorter.

17. *Lomanthus yauyensis* (CABRERA) B. NORD. & PELSNER, comb. nov.

Basionym: *Senecio yauyensis* CABRERA, Notas Mus. La Plata, Bot. 18(89): 205, fig. 4 (1955) (same as Not. Mus., Eva Peron, Bot., 18: 205.1955). – Type: Peru, Dep. Lima, Prov. Yauyos, Chiclla, cerro frente a Tupe, 3750 m, 10.I.1952, E. CERRATE & O. TOVAR 1140 (LP holotype!, MO isotype!).

Found in Central and South Peru (Dep. Arequipa, Lima, Cajamarca) at 3200–3900 m.

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